Design and implementation of the scalable multicast balanced gamma (BG) switch

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Abstract

The paper presents the design and implementation of a new multicast switch for broadband communications. Using distributed control and modular design, the multicast balanced gamma (BG) switch features a scalable, high performance architecture for unicast, multicast and combined traffic under both uniform and non-uniform traffic conditions. The important design characteristic of the switch is that a distributed cell replication function for multicast cells is integrated into the functionality of the switching element (SE) with the self-routing and conflict contention functions. We discuss in detail the design issues associated with the multicast functionality of the switch. VLSI implementation results for the BG switch fabric using 0.18 /spl mu/m CMOS technology are presented. Scalability and performance properties of the multicast BG switch are also briefly discussed.

Index Terms

Inspec

Controlled Indexing

CMOS integrated circuits VLSI distributed control electronic switching systems integrated circuit design multicast communication multistage interconnection networks semiconductor switches telecommunication network routing telecommunication traffic

Non-controlled Indexing

0.18 micron CMOS technology VLSI implementation broadband communications conflict contention distributed cell replication multicast cells multicast switch multicast traffic multistage interconnection network scalable architecture scalable multicast balanced gamma switch self-routing switching element unicast traffic

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